

Stakeholders seek to minimise surface safety risks

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Regulators, air navigation service providers, airport operators, and industry work in tandem to combat problems associated with runway safety. *Ben Vogel* reports

Runway excursions – when the aircraft veers away from the runway during take-off or landing – are the most common type of accident reported annually, albeit with a low fatality risk. However, due to their high frequency of occurrence, they continue to receive attention. Further reduction in the occurrence of runway excursions remains a top priority for the aviation community, although there is strong statistical evidence that good progress is being made.

The International Air Transport Association (IATA) presented analysis from its Global Aviation Data Management (GADM) platform to delegates attending the International Civil Aviation Organization (ICAO) Global Runway Safety Symposium in Peru in November 2017.

Citing its GADM accident database for the period January 2012 to December 2016, IATA described a total of 82 runway/taxiway excursions, divided equally between jet aircraft and turboprops. Three of these accidents were fatal, resulting in 14 deaths – but the trend is downwards, falling each year from 22 in 2012 to just 12 in 2016.



Stansted is the first participating airport in Unifying Safety Nets & Surface Movement to field a solution. (Stansted Airport)

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The problem of runway excursions is also addressed from the pilot perspective by the Flight Safety Foundation (FSF), which published a study called 'Go-Around Decision-Making and Execution Project' in March 2017. Having examined 16 years data, the FSF study concluded that 83% of

runway excursions involving aircraft in the landing phase could have been avoided with a go-around procedure. “In other words, 54% of all accidents could potentially be prevented by going around. It is generally felt that an unstable approach is the primary cause of landing excursions,” the FSF argued. “However, ... just over half of the landing excursions followed a fully stable approach; in these instances, the flight became unstable only during landing.”

At the Peru symposium, ICAO agreed a new five-year Global Runway Safety Action Plan (GRSAP) that includes targets and timelines for introducing measures preventing runway-linked accidents; commitments on training, data management and assessment; and creation of runway safety teams. The GRSAP is designed as a blueprint for implementation of runway safety targets that were established under the ICAO Global Aviation Safety Plan.

On 7 February, during the 2018 Singapore Airshow, IATA and the Civil Aviation Authority of Singapore (CAAS) agreed to establish a Global Safety Predictive Analytics Research Center (SPARC) in Singapore, with an initial focus on runway safety.

SPARC depends on strong collaboration, not just between IATA and the CAAS but also in the broader aviation community, to develop effective predictive models. Predictive analytics will identify potential aviation safety hazards and assess related risks, IATA announced, by leveraging operational data in GADM and research capabilities in Singapore. “End users across the aviation community can then work collaboratively at the system level to address and implement appropriate safety measures to mitigate the risks, or even to prevent the occurrences of safety hazards,” it added.

IATA Director General and CEO Alexandre de Juniac acknowledged the continued importance of the accident investigation process. “However, as the number of accidents declines, we need to take a system-based, data-driven, predictive approach to preventing accidents, including analysing the more than 10,000 flights that operate safely every day,” he said.

In time SPARC will turn its attention to runway incursions, defined by ICAO as “any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and take-off of aircraft”. Included in this category are incidents such as wildlife intrusion, or ground support equipment (GSE) straying into the path of a moving aircraft on a runway or taxiway.

Analysis by IATA of runway incursion incidents, logged in its Safety Trend Evaluation, Analysis and Data Exchange System (STEADES) database, shows that on average there is a runway incursion event reported in STEADES every day, with a total of 1,971 reports from 2012–16. The highest rate in this period was recorded in 2013 (0.045 reports per 1,000 flights), and the lowest was in 2016 (0.029 reports per 1,000 flights).

As reported by *Jane's*, 12 airport operators in Europe are engaged in a unique large-scale initiative with the SESAR Deployment Manager (SDM) to improve the safety, operational efficiency, and environmental performance of surface operations.

Unifying Safety Nets & Surface Movement was launched in July 2017 as a suite of Pilot Common Project (PCP) deployments, led by Groupe ADP and co-ordinated by the SDM. It includes 13 projects from 15 partners in nine countries.

Total investment of about EUR125.32 million (USD154.03 million) includes EUR52.25 million in European Commission INEA co-funding in the 2016 CEF Call for Transport.

Previously, airport operators applied individually for EU funding of air traffic management modernisation projects – now, they benefit from a collaborative funding approach that should enable them to accelerate the time it takes to field solutions.

A-SMGCS/A-VDGS projects

Participants in Unifying Safety Nets & Surface Movement argue that the application of harmonised, synchronised solutions would facilitate interoperability and help to defragment European ATM by achieving four main targets in the SESAR Deployment Programme (AF2: Airport Integration and Throughput).

AF2 calls for the rollout of Advanced Surface Movement Guidance and Control System (A-SMGCS) capabilities to Levels 1 and 2, as well as A-SMGCS routing and planning functions, airport safety nets associated with A-SMGCS Level 2, and aircraft and vehicle systems contributing to airport safety nets. Safety nets consist of detection and alerting of conflicting ATC clearances, or instances where vehicles or aircraft deviate from their assigned path.

Unifying Safety Nets & Surface Movement partners calculate the following benefits for all participants (based on an initial evaluation that will be updated in 2018): better or steady levels of safety; annual CO₂ emission reduction of 158,000 tonnes; 111 tonnes of reduction in NOx emissions; fuel savings for airlines of EUR25 million with 50,000 tonnes of lower fuel consumption; and a taxi time reduction of 563,000 minutes.

One relatively simple EUR156,500 project has already been completed: in November 2017, Stansted added transponders to airside vehicles to improve situational awareness, reduce the risk of runway incursions, and contribute to the overall airport safety culture.

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